

## ORIGINAL STUDY

## A Comparison Study in the Management of Ectopic Pregnancy between State of Qatar and Kingdom of Bahrain

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### Abstract:

*Ectopic pregnancy is of increasing concern to gynecologists since it is a major cause of maternal mortality and morbidity in reproductive age women. It occurs when the conceptus implants in an abnormal position other than the uterus. Although the incidence of ectopic pregnancy during the 20 years studied increased five-folds, the risk of death from ectopic pregnancy declined by 90%. This decline might be related to the increase awareness of this condition that accompanied improved diagnostic technology and thus improved management and care. However, ectopic pregnancy remains the leading cause of maternal mortality in first trimester. This study was to evaluate the management of ectopic pregnancy in the State of Qatar and the Kingdom of Bahrain in a time period from January 1, 2000 to August 31, 2003.*

*Statistical analysis showed high incidence of ectopic pregnancy with increase in age and abortion. Etiological factors including contraceptive usage, infertility treatment and previous ectopic pregnancy were shown to increase ectopic pregnancy rates. In the Kingdom of Bahrain, management of ectopic pregnancy was carried by surgical salpingectomy and Laparotomy and to a lesser extent medical Methotrexate management was also carried on. While in the State of Qatar it was the opposite as Methotrexate was mainly used rather than the surgical treatment. It is recommended that further investigations are needed to enhance this data and to prove the benefits of medical management over the surgical management.*

### Introduction:

Ectopic pregnancy is a major cause of morbidity and mortality in reproductive age women, accounting for 90% of pregnancy-related deaths in the first trimester<sup>(1)</sup>.

This type of abnormal pregnancy can be defined as the consequence of an anomaly of implantation of the ovum outside the uterus<sup>(2)</sup>. It was first described by Albucasis in 936 AD; management remained unchanged until Lawton Tait carried on a surgical intervention in 1884<sup>(3)</sup>. Until that time, management was expectant, carrying a mortality rate of approximately 60%. With improved medical and surgical therapy, mortality rate has dropped to 4%-10% of all maternal deaths and about 16% of deaths from hemorrhage during pregnancy<sup>(4)</sup>.

Many factors were found to be responsible for the apparent increase in the incidence of ectopic pregnancy; the diseases that ultimately alters normal tubal anatomy and results in a delay in transport of the conceptus such as pelvic inflammatory disease, endometriosis or even a previous tubal surgery<sup>(5)</sup>.

However, the early diagnosis of ectopic pregnancy with the highly sensitivity and rapidness of  $\beta$ -human chorionic gonadotropin ( $\beta$ -hCG) assays and the aid of abdominal and, more recently, vaginal ultrasonography, serum progesterone concentration determinations, and aggressive use of diagnostic laparoscopy had led to decrease in the mortality rate<sup>(6)</sup>. With all these technical improvements, healthcare workers are now more aware about the implications of missing the diagnosis.

However, despite the improvements in the mortality rates and diagnostic methods, patients still suffer from the effect of infertility and recurrence of ectopic pregnancies<sup>(7)</sup>. To improve intrauterine pregnancy rates in couple wishing further fertility, traditional laparotomy techniques involving universal salpingectomy with or without oophorectomy were being replaced with presentation of salpingostomy or medical therapy<sup>(8)</sup>. Moreover, operative laparoscopy has largely supplanted laparotomy in many health centers. Whereas medical management of ectopic pregnancy has been highly used as an alternative for the surgical management especially for couples wishing further fertility<sup>(9)</sup>.

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Thus, this project sheds the light on management of ectopic pregnancy under the influences of age, medical history, last menstrual period, previous causes, presentations, variety of diagnostic methods, the best way of treatment and the expected complications of ectopic pregnancy.

### Material and Methods:

This analysis included 350 women who experienced ectopic pregnancy participated in this study, 175 one of them were from Hamad Women's Hospital in the State of Qatar, while the rest 175 ones were from both Salmaniea Medical Center and Bahrain Defense Force Hospital in the Kingdom of Bahrain. The retrospective study was done over a period of three years from January 1, 2000 to August 31, 2003.

Data were collected from the medical record on the bases of the medical, previous and present history. The medical history discussed the age, blood pressure, hemoglobin, last menstrual period, gravida, para and abortion. Whereas the previous history involved endometriosis, salpingitis, tubal surgery, multiple abortion, pelvic inflammatory disease, previous ectopic pregnancy and the previous treatment. On the other hand, the present history comprised the presentations, which are bleeding, amenorrhea, pain, shock, pale, vomiting, discharge, vaginal spotting and the different diagnostic methods including: ultrasound,  $\beta$ -hCG, pregnancy test, culdocentesis and progesterone level. In addition, it covers the different ways of treatment such as laparoscopy, laproctomy, fimbrial milking, salpingectomy and salpingostomy. Moreover, it encompassed the confirmation of cytology, histology result and the days of hospitalization.

In the stage of reading the medical records, the patients' files were randomly chosen and divided into categories according to their nationalities. Their biochemical results were carefully analyzed, the ultrasound results were examined and the type of treatment chosen were put into consideration.

### Results:

According to aim of this project, the data of the 350 patients were collected, calculated and grouped into 3 main categories. These categories include the baseline medical data, the previous history and the present history of ectopic pregnancy.

#### The Baseline Medical Data:

Baseline data was represented as descriptive data information; the following **Table 1** showed the demographic characteristics for the four variables of nationality, which were Qatari, Non-Qatari, Bahraini and Non-Bahraini.

#### The Previous History Data:

The previous history data was represented as descriptive data information with correlation of the previous history of disease and ectopic pregnancy in addition to its management

method. The Contraception history was considered a predisposing cause of ectopic pregnancy as **Table 2** showed. It had been noticed that Qatari and Non-Qatari patients were using IUD more, while Bahraini and Non Bahraini were using pills more. This relationship was significant with a P-value < 0.05.

**Table 1: Patient Demographic Characteristics**

Descriptive Variables	Qatari	Non-Qatari	Bahraini	Non-Bahraini	
Nationality	13.1%	31.7%	38.9%	16.3%	
Age	≤ 30	59.4%	55.0%	53.4%	56.1%
	> 30	40.6%	45.0%	46.6%	34.9%
Gravida	1	9.0%	7.1%	6.7%	6.8%
	≤ 3	12.2%	7.7%	3.4%	4.2%
	(4 - 6)	57.7%	63.1%	25.3%	27.1%
	≥ 7	21.1%	22.1%	64.9%	61.9%
Para	0	12.2%	8.2%	16.9%	14.2%
	(1 - 4)	20.9%	23.4%	31.4%	29.9%
	≥ 4	66.9%	68.4%	51.7%	55.9%
Abortion	0	15.6%	13.5%	6.3%	14.5%
	1	28.1%	30.6%	19.3%	20.9%
	> 1	56.3%	55.9%	74.4%	64.6%

**Table 2: The Pre-Ectopic Pregnancy Contraception History Distribution according to the Nationality**

Descriptive Variables	Qatari	Non-Qatari	Bahraini	Non-Bahraini	
Comparative History	(No)	81.2%	84.9%	73.8%	71.5%
	(IUD)	12.3%	10.2%	7.7%	11.1%
	(Pills)	6.5%	4.9%	18.5%	17.4%
	Total	100.0%	100.0%	100.0%	100.0%
Chi Square Test Fishers' Exact Test 2 sided				0.043	

Never the less, the previous history of infertility had a great effect on ectopic pregnancy patients as it was shown in the calculation of data. **Table 3** showed that Qatari and Bahraini complained more from 1ry infertility while Non Qatari and Non Bahraini complained more from 2 years infertility. This relationship was of significant P-value < 0.05.

**Table 4** showed that patients with history of infertility were treated either by Clomid or IVF. It was found that Qatari and Non-Qatari patients had a history of treatment with Clomid more than the other groups

The previous ectopic pregnancy treatment was of important for deciding the next situation of the patient. It was well differentiated in the **Table 5**. It was found that Qatari and Non-Qatari had higher incidence of past history of ectopic pregnancy

**Table 3: The Total Number of Infertility History Distribution according to the Nationality**

Descriptive Variables	Qatari	Non-Qatari	Bahraini	Non-Bahraini	
H/O Infertility	(No)	68.9%	66.1%	71.1%	73.9%
	(1 ry)	26.4%	22.5%	25.1%	19.5%
	(2 rys)	4.7%	10.4%	3.8%	6.6%
	Total	100.0%	100.0%	100.0%	100.0%
Chi Square Test Fishers' Exact Test 2 sided				<b>0.044</b>	

**Table 4: Treatment of the Infertility Cases according to the Nationality**

Descriptive Variables	Qatari	Non-Qatari	Bahraini	Non-Bahraini	
H/O Infertility	(No)	68.9%	66.1%	71.1%	73.9%
	(Clomid)	17.8%	16.4%	12.9%	6.3%
	(IVF)	13.3%	17.5%	16.1%	19.9%
	Total	100.0%	100.0%	100.0%	100.0%
Chi Square Test Fishers' Exact Test 2 sided				<b>0.050</b>	

**Table 5: The Previous Ectopic Pregnancy Distribution according to the Nationality**

Descriptive Variables	Qatari	Non-Qatari	Bahraini	Non-Bahraini	
Previous Ectopic Pregnancy	(No)	87.5%	88.4%	91.2%	90.6%
	(Lt. Side)	3.3%	2.9%	6.1%	6.7%
	(Rt. Side)	9.2%	8.7%	2.8%	2.7%
	Total	100.0%	100.0%	100.0%	100.0%
Chi Square Test Fishers' Exact Test 2 sided				<b>0.052</b>	

and it is common in the left side, while Bahraini and Non-Bahraini patients had higher incidence in the right side. In studying the different ways of treatments, it was found that Bahraini and Non-Bahraini patients had higher percentage in the previous surgical treatment, whereas the Qatari and Non-Qatari patients were with higher percentage in the medical treatment *Table 6*.

**The Present History Data:**

This data involved the presentation, diagnosis and treatment of the patients.

*Table 7* summarized the relationship between the presentation at the onset of ectopic pregnancy and the nationality of the patient. As it could be recognized that pain and bleeding were the most common presentation in all patients. Furthermore, amenorrhea was detected in 18.3% of the Qatari and 18.7% of

**Table 6: The Complete Comparison of the Previous Treatment Distribution according to the Nationality**

Descriptive Variables	Qatari	Non-Qatari	Bahraini	Non-Bahraini
Laproscopy	12.2%	16.1%	40.6%	42.7%
Laproctomy	13.6%	14.3%	25.4%	23.7%
Salpingectomy	11.3%	11.3%	13.3%	12.2%
Salpingostomy	12.0%	11.4%	19.7%	10.2%
Methotrexate	50.9%	46.9%	1.0%	1.2%
Total	100.0%	100.0%	100.0%	100.0%
Chi Square Test Fishers' Exact Test 2 sided				<b>0.044</b>

**Table 7: The Presentations Distribution according to the Nationality**

Descriptive Variables	Qatari	Non-Qatari	Bahraini	Non-Bahraini
Bleeding	75.0%	74.9%	74.9%	76.8%
Amenorrhea	18.3%	18.7%	15.9%	16.8%
Pain	75.0%	75.0%	75.0%	75.0%
Shock	9.2%	10.3%	11.2%	12.4%
Vomiting	12.8%	13.0%	14.0%	13.1%
Discharge	9.7%	8.1%	9.0%	5.9%

**Table 8: The Diagnosis Distribution according to the Nationality**

Descriptive Variables	Qatari	Non-Qatari	Bahraini	Non-Bahraini
Ultrasound	30.0%	35.0%	39.0%	38.0%
Pregnancy Test	22.9%	21.3%	24.8%	25.0%
$\beta$ - hCG	47.1%	43.7%	36.2%	37.0%
Total	100.0%	100.0%	100.0%	100.0%
Chi Square Test Fishers' Exact Test 2 sided				<b>0.033</b>

the Non-Qatari and was detected in 15.9% of the Bahraini and 16.8% of the Non-Bahraini. It was also noticed that Non-Bahraini had higher incidence of shock than other studied groups.

*Table 8* had shown the different ectopic pregnancy diagnostic methods, it had also shown that the descriptive variables were with a significant P-value < 0.05.

*Table 9* showed that the majority of 58.3% of the Qatari and 57.6% of the Non-Qatari had been treated using Methotrexate, whereas the majority of 43.9% of the Bahraini and 40.8% of the Non-Bahraini patients had been treated by laparoscopy.

**Table 9: The Complete Comparison of the Present Treatment Distribution according to the Nationality**

Descriptive Variables	Qatari	Non-Qatari	Bahraini	Non-Bahraini
Laproscopy	12.3%	10.9%	43.9%	40.8%
Laproctomy	11.2%	12.3%	21.2%	25.1%
Salpingectomy	13.5%	14.6%	11.0%	12.1%
Salpingostomy	4.7%	4.6%	20.8%	20.8%
Methotrexate	58.3%	57.6%	1.9%	1.2%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
<b>Chi Square Test Fishers' Exact Test 2 sided</b>				<b>0.052</b>

## The Discussion:

In this study, it had been found that older ages, multi-paras patients and patients with multiple abortions were at higher risk of developing ectopic pregnancy. Comparing this result with other studies, it had been reported that these risk factors cause increased ectopic pregnancy rates by 6 folds<sup>(5)</sup>.

Moreover, the etiology of ectopic pregnancy had been taken in consideration through out this study and it had been found that previous contraceptive history of intra uterine device and pills had increased the risk of ectopic pregnancy approximately 17.0% in the State of Qatar and 27.4% in the Kingdom of Bahrain. However, Gleicher et al<sup>(10)</sup>, did not approve this result in a similar study, as they had reported that between 60% to 70% of ectopic pregnancies were occurring with the concomitant use of contraceptives.

Never the less, it had been also found in this study that a patient with history of infertility treated by Clomid or In Vitro Fertilization had a high risk of developing ectopic pregnancy. This was agreed with a study done by Cofino et al.<sup>(11)</sup>, in which an increased incidence of ectopic pregnancy due to the treatment of infertility by 2 folds was documented. Ectopic pregnancy was also linked to previous tubal surgery which led to the damage of the fallopian tube and was reported to increase ectopic pregnancy rates by 67% by Emerson et al.<sup>(12)</sup>. However, in this study, the risk of ectopic pregnancy was decreased with a percentage of 23.8% in the State of Qatar and 14.0% in the Kingdom of Bahrain.

Yet, it had been found that previous ectopic pregnancy could lead to another one and this had been estimated in this study to be 12.1% in the State of Qatar and 9.2% in the Kingdom of Bahrain. This result resembled a study case which was done by Brenner et al<sup>(13)</sup>, who reported that the chance of another ectopic pregnancy after one was 5% to 20% depending on the state of the fallopian tube after treatment.

With regard to the presentation of ectopic pregnancy, it had been found in this study that pain was the most common presentation of all patients who participated in this study. This, however, was supported by a study made by Cumming et al<sup>(14)</sup>, and was reported as 95% of ectopic pregnancy symptoms were pain.

It had also been found that bleeding was the second most common presentation of ectopic pregnancy since it might result from the decline of the endometrial supported by endocrine failure which causes uterine mucosa bleeding and it was calculated to be approximately 98% in all cases in the State of Qatar and the Kingdom of Bahrain. This was agreed with Schiff et al<sup>(15)</sup>, who reported bleeding in 97% of ectopic pregnancy presentations. On the other hand, vaginal spotting due to endometrial shedding was calculated in this study as an ectopic pregnancy presentation by an approximate percentage of 36%. However, it had been suggested as a presentation of severe vaginal infection rather than ectopic pregnancy<sup>(16)</sup>.

The treatment could not be established without the aid of diagnosis. Through out this study, it had been found that pregnancy test was performed in 22.1% of ectopic pregnancy patients in the State of Qatar and 24.9% in the kingdom of Bahrain and was found to be a positive result. This, however, was less than that was found in 60% of ectopic pregnancy cases studied by Goldner et al.<sup>(17)</sup>. Furthermore, this study had detected ultrasound as a major diagnostic method in diagnosing ectopic pregnancy in approximately 32.5% of all cases in the State of Qatar and 38.5% in the Kingdom of Bahrain. Hammond & Bachus<sup>(18)</sup> had reached to a different result in 91% of the cases.

Another diagnostic method was the investigation of the  $\beta$ -hCG measurements which was detected in 47.4% in the State of Qatar and 36.6% in the Kingdom of Bahrain in an abnormal low values. A higher calculated percentage of 94% had been reported in a study made by Smith et al.<sup>(19)</sup>, since in a hemodynamically stable pregnant patient suspected of having an ectopic pregnancy; subsequent management was based upon serial quantitative serum  $\beta$ -hCG values. In other words, this might be referred to hospital and doctors procedure in diagnosing ectopic pregnancy.

The treatment was of great important to ensure the safety of the patients' life and fertility future. In this study, the surgical management was carried in 42.6% of the cases in the State of Qatar and 98.4% in the Kingdom of Bahrain, while the medical management was carried in 57.9% of the cases in the State of Qatar and 1.6% in the Kingdom of Bahrain. A similar situation was brought up in a study which was made by Bachus et al.<sup>(20)</sup>, and reported as the priority of surgical management over medical management. On the other hand, medical management was preferred over the surgical management due to its ability

to preserve the patients' fertility. This was highly agreed by Jarvinen et al.<sup>(21)</sup>, and Freakely et al.<sup>(22)</sup>.

And to be more specific a detailed study on the surgical management was conducted. This study had resulted in salpingectomy and laproctomy being used in 12.8% of the cases in the State of Qatar and 27% in the Kingdom of Bahrain. However, it had been reported by Mishell<sup>(23)</sup> that salpingectomy and laparotomy treatment was carried on 30% of the patients.

Last but not least, the hospitalization was calculated in this study and had been found to be more than 5 days in 27.2% of ectopic pregnancy case in the State of Qatar and 62.7% in the Kingdom of Bahrain. This was not in agreement with Westrom et al.<sup>(24)</sup> who reported the hospitalization had less than 4 day in normal ectopic pregnancy cases. However, the increase hospitalization days might be due to the complications, which might follow the treatment.

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